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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR  | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/037,823      | 11/09/2001  | Christopher W. Gabrys | IG2216US            | 6588             |

7590 10/23/2002  
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EXAMINER

PHAM, LEDA T

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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2834

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/037,823

Applicant(s)

GABRYS, CHRISTOPHER W.

Examiner

Leda T. Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 08 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of group I (claims 1 – 16) in Paper No. 4 is acknowledged. The traversal is on the ground(s) that include the process steps correspond basically to the structural elements in claim 1. This is not found persuasive because the fields of search for process including steps and apparatus claims are not coextensive and the determinations of patentability of process and apparatus claims are different, that is process limitations and apparatus limitations are given weight differently in determining the patentability of the claimed inventions. Thus, separate searches are required.

The requirement is still deemed proper and is therefore made FINAL.

Group I (claims 1 – 16) and group II (claim 17) are presented for examination.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: the upper and lower flywheel shafts 130 and 131. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 124, 125 and 126. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

*Specification*

4. The disclosure is objected to because of the following informalities: on page 4 line 17, “No. XXXXX” need to be a specific number. Line 20 page 5, “off” should be changed to – of – Lines 8 – 9 page 7, “upper and lower flywheel shafts 140 and 131” does not show in figure 3.

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 7 – 8, 11 – 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

“the orientation of the axis of rotation” in claims 1, 12 – 16 are unclear because the tilt sensor detecting the orientation of the axis of rotation of which component: the energy storage flywheel, the bearing system, the motor or the generator. In light of the spec. it is understood as the orientation of the axis of rotation of the energy storage flywheel.

In claims 7 – 8, and 12, the term “said tilt switch” lacks of antecedent basis. In light of the spec. subject matter recited “said tilt switch” is understood as “said tilt sensor” recited in claims 7 – 8, and 12.

In claim 11, “said annular contact” lacks of antecedent basis.

Claim 12 is indefinite because the two clauses “if” are unclear. They recited a probability and do not positively recite limitations. Is the first “if” in the claim is redundant? If it is so, the

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recitation should clearly states that “said tilt switch detects the orientation of the axis of rotation is outside of tolerance from vertical by detecting if the tilt angle of the axis of rotation is acceptable or not”. If this is not the case, then clearly rewrite the claim to recite the limitation of the claim.

In claim 15, “said motor means” lacks of antecedent basis.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 – 8, 13 - 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blake et al. (U.S. Patent No. 6,388,347 B1) in view of Bichler et al. (U.S. Patent No. 5,925,952)

Blake discloses a flywheel energy storage system (figure 1, 2) comprising an energy storage flywheel (118) supported on a bearing system (142) for rotation about a substantially vertical axis inside a container (112) with an internal low friction atmosphere; a motor and a generator (128) for accelerating and decelerating said flywheel for storing and retrieving energy. Blake fails to disclose a tilt sensor that detects if the orientation of the axis of rotation is outside a predetermined tolerance from vertical, and produces a signal to trigger appropriate corrective actions.

Bichler discloses a tilt sensor for detecting the orientation of the axis of rotation in a predetermined tolerance from vertical, and producing a signal to trigger appropriate corrective actions (column 3, lines 9 – 17, SE1 –SE4 figure 1b and 2).

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Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blake's flywheel energy storage having a tilt sensor as taught by Bichler. Doing so would provide a flywheel energy storage stable in its rotation.

Referring to claim 2, Blake discloses the flywheel energy storage system wherein said bearing system (142) is comprised of magnetic bearings (146, 148 figure 5).

Referring to claim 3, Blake discloses the flywheel energy storage system wherein said magnetic bearings (204, 206) provide passive radial centering force to said flywheel (column 14, lines 44 – 47).

Referring to claim 4, Blake discloses the flywheel energy storage system wherein said magnetic bearings (204, 206) use active radial control (column 14, lines 44 – 47).

Referring to claim 5, Blake discloses the flywheel energy storage system wherein said bearing system (142) is comprised of a combination of magnetic and mechanical bearings (column 9, lines 28 – 30).

Referring to claim 6, Blake discloses the flywheel energy storage system wherein said magnetic bearings are used to provide axial lift force to the flywheel and said mechanical bearings provide radial centering force (column 9, lines 28 – 35).

Referring to claim 7 and 8, Bichler discloses the tilt sensor detects excessive tilting of said flywheel energy storage system when the axis of rotation of said flywheel is in the range of (-4, 4) degrees from vertical (column 3, lines 64 – 65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the range of the tilt angle of the axis of rotation of said flywheel from vertical for the said tilt switch detecting when

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it is more than 5 degrees, because it has been held that where the general ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Referring to claim 13 – 16, Bichler discloses the claimed invention except for the detection of the orientation of the axis of rotation being too far from vertical cause an alarm, remote alarm, prevention of power application, and discharging of flywheel energy storage. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

9. Claims 9 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blake and Bichler as applied to claim 1 above, and further in view of Graevner (U.S. Patent No. 5,112,126)

Referring to claim 9, the combination of Blake and Bichler refs substantially discloses the claimed invention, except for the added limitations of the tilt sensor including a mechanical switch.

Graevner discloses in his invention a sensor including a mechanical switch (42, figure 3) for detecting the spatial angle.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the flywheel energy storage of Blake and Bichler with the sensor having a mechanical switch as taught by Graevner for detecting the angle.

Referring to claim 10, Graevner discloses the mechanical switch using a pendulum (42, figure 3)

Referring to claim 11, Graevner discloses the tilt sensor including a pendulum hanging inside an opening in an annular electrical contact whereby the pendulum contacts the annular electrical contact and completes an electrical circuit to generate said signal when said flywheel energy storage system tilts beyond said predetermined tolerance from vertical.

Referring to claim 12, Graevner discloses the tilt sensor detecting the orientation of the axis of rotation outside of tolerance from vertical by detecting the tilt angle of the axis of rotation (lines 48 – 54, column 3).

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blake in view of Hockney et al. (U.S. Patent No. 6,262,505 B1).

Blake discloses a flywheel energy storage system (figure 1, 2) comprising an energy storage flywheel (118) supported on a bearing system (142) for rotation about a substantially vertical axis inside a container (112) with an internal low friction atmosphere; a motor and a generator (128) for accelerating and decelerating said flywheel for storing and retrieving energy. However, Blake fails to teach the flywheel energy storage having a tilt switch that detects earthquakes.

Hockney discloses in his invention the flywheel energy storage having a tilt sensor that detects earthquakes (column 6, lines 25 – 29).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Blake's flywheel energy storage having a tilt sensor as taught by



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Hockney. Doing so would provide a flywheel energy storage having a sensor to detect earthquakes.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leda T. Pham whose telephone number is (703) 305-4864. The examiner can normally be reached on M-F (7:30-5:00) first Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9176 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

Leda T. Pham  
Examiner  
Art Unit 2834

PRIMARY EXAMINER  
LEDA T. PHAM

LTP  
October 21, 2002